

Psychological Bulletin

EDITED BY

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JOHN B. WATSON, JOHNS HOPKINS UNIVERSITY (*J. of Exp. Psych.*)
JAMES R. ANGELL, UNIVERSITY OF CHICAGO (*Monographs*) AND
MADISON BENTLEY, UNIVERSITY OF ILLINOIS (*Index*)

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THE
PSYCHOLOGICAL BULLETIN

GENERAL REVIEWS AND SUMMARIES

VISUAL SPACE

BY MABEL C. WILLIAMS

University of Iowa

Articles on visual space appearing during the last two years may be classified roughly into three groups: discussion of some of the less well known illusions, stereoscopic vision, and philosophical interpretations of the problem of space.

As early as 1858 Panum described a certain solid or stereoscopic effect with the fusion of the homonymous images of a single line and of two lines close together. Henning (4) subjects this phenomenon to a careful analysis, both critical and experimental. He defends Hering's explanation that positions in space correspond to the retinal areas stimulated. Jaensch on the other hand explains the illusion as the result of the shifting of the attention and the corresponding "impressiveness" of the lines attended to. Henning devotes long pages to the refutation of Jaensch's conclusions and describes some ingenious experiments. Müller (6) fills one whole number of the *Zeitschrift* with an exhaustive analytical discussion of the Aubert phenomenon, the apparent change in the direction of a vertical line with change in the position of the head. He distinguishes between the real Aubert effect, the turning of the line in the direction opposite to that in which the head is turned, and a less marked turning of the line in the same direction in which the head is turned. No very extensive experimental data are presented. Much emphasis is placed upon individual differences of his observers, and they are grouped in representative types. Among factors which probably contribute to the illusion are the harmonious or antagonistic positions of the head, eyes and trunk, together with

the change in position of the retinal elements stimulated. Various subjective or objective associates of the line tend to influence its apparent position. Previous work upon this illusion is summarized and criticized.

Zoth (12) has devised a simple little instrument, a "plastoskop," to use as an aid in bringing out relief in paintings. It gives better results than the usual method of viewing the picture monocularly through the hollowed hands. The little instrument, which is made of leather and is collapsible, is convenient and since it can be carried in the vest pocket it may always be at hand. Benussi (1) reconsiders the theory of Witasek (*Zsch. f. Psychol.*, 50, 161-218) that images from the same fixation point in space do not fall upon corresponding retinal points. Witasek calls this the "monocular localization tendency." Benussi has devised an interesting haploscope and concludes from his experiments with it that the effect in question does not arise when all forms of eye movement are excluded. Witasek (11), commenting upon Benussi's results, admits that the law is not upheld but reserves explanation until after further consideration. Edridge-Green (2) has summarized his own paper: Perception of binocular relief and solidity is not dependent upon the combination of images falling upon disparate retinal points; two photographs from the same negative will combine and give relief and the result is often as good as with real stereoscopic views; if one half of an ordinary stereoscopic picture is suddenly covered with white cardboard, relief remains, but vanishes when the eye on the side covered is closed; in ordinary binocular vision, the right eye dominates for the right side and the left for the left side of the combined field, unless the position of two points in space is noted, when one eye, usually the right, dominates; the mind projects outward the appearance of a solid object which would give rise to the images falling upon the retinas; when the mind is not able to project the image of an object in space which would produce the two images, double images or binocular rivalry takes place; binocular struggle is absent when the two inner halves of the two pictures are covered, and the outer halves are combined. Grünbaum (3) commenting upon Edridge-Green's paper refuses to dismiss so summarily the disparate images, and also refuses to accept any wholly psychological explanation of the perception of the third dimension, such as he presents. In a paper read shortly before his death, Professor Pierce (8) reports some very interesting conclusions from experiments upon binocular stereoscopic fusion.

"We have no right to expect that persons will see certain stereoscopic solids merely because the appropriate diagrams are placed before their eyes." Four causes operate to make the stereoscopic effect uncertain: (1) visual habit may bring it about that monocular vision is superior to binocular, as in right-eyed people; (2) there may be a "cramp" of the muscles of accommodation and convergence and the usual synergy of accommodation and convergence must be broken up, especially in free stereoscopy; (3) each eye may receive its appropriate stimulation but the various impressions fail to fuse; (4) a strong and unfavorable pre-perception may be at work, a sort of cramp of apperception as it were. These four explanations are all supported by experimental evidence.

The contributions of Selety (9) and Henry (5), since they are concerned with philosophical interpretations of the space of geometry, are not of great vital interest to the psychologist and they do not lend themselves readily for summarization. Münsterberg (7) gives a short account of the elements of space perception and asserts "that there is no perception of space in which muscle activity is not originally involved." Titchener (10), who also gives a short but comprehensive account of the factors in visual space, adopts a more nearly psychological point of view when he says that "the binocular picture carries the immediate meaning of depth or voluminousness."

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AUDITORY SPACE

BY DANIEL STARCH

University of Wisconsin

The experiments conducted by Geissler (3) were designed to ascertain in a quantitative manner the effect of a definite expectation of the sound from a certain direction upon the accuracy of locating the sound. The tests were made with twenty observers. The sound stimuli were given at a distance of 75 cm.¹ from the center of the observer's head and on a level with the ears at points 30° apart around the entire circumference. The observers were asked to direct their attention to certain regions and the stimuli were given either in that general region or in the opposite region. In some trials the attention was left undirected. The results indicated that the localization is either enhanced or diminished by almost half of the original error according as the expectation is to or away from the regions of the stimulus-positions. Certain other observations made by Geissler, such as the slightly greater accuracy of the women over the men and the slightly greater accuracy on the left side than on the right, are uncertain for the present number of observers.

The problem of the investigation made by Baley (2) was to determine the accuracy of localizing a group of tones presented simultaneously, a part of the group to the right ear and a part to the left. The groups of tones varied in number from four to ten and were produced by organ-pipes and whistles which were located in a distant room. The sounds were conducted in tubes directly to the ears. The tests were made with three well-trained observers. The response consisted in stating which of the tones were presented to each ear. Baley found the tones were referred correctly and quickly to the proper ear.

Anderson (1) working both out of doors and in a room found that the direction of the sound has no effect upon the accuracy of the discrimination of the pitch of the sound.

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SPACE ILLUSIONS

BY HARVEY CARR

University of Chicago

Pierce (4) asserts that for him the proofreader illusion is not visual or perceptual but rather apperceptive and judgmental in character. The error consists of a wrong auditory or vocal response to the visual given; the word is seen correctly but is read wrongly. The phenomenon is termed an imagery illusion. It is noted that this illusion is difficult to study as it occurs only with rapid reading and disappears with critical observation. Pierce suggests a three-fold classification of illusions on the basis of their stability under critical examination.

Hennig (3) reports a new illusion. A wooden picket fence observed through a similar one suffers certain distortions, the width of the wooden strips as well as the space between them appears magnified about three fold. To obtain the effect the distance of the observer from the nearer fence must be at least equal to that separating the two fences. When the distant fence is perceived through an iron fence consisting of intersecting diagonal rods, the wooden panels present a mosaic appearance of alternate light and dark rhomboids.

The article of Zahlfleisch (5) consists of a critique of Vaihinger concerning the interpretation of Kant in relation to the concepts of error, reality, illusion and hallucination.

The first phenomenon reported by Arps (1) is an illusion of falling with accompanying terror and pains in the head experienced by a normal boy after retiring but before falling asleep. The occurrence of the illusion apparently depended upon the nature of the boy's activity during the day. Illumination in the room tended to prevent and dispel the illusion and in time resulted in a permanent cure. It is suggested that any intense distracting stimulus would have accomplished the same result. His second illusion concerns a young girl who suffered intermittent spells of micropsia, a tendency for fixated objects to decrease very noticeably in size. No defect in vision was detected by oculists. The illusion was dispelled by fixating a moving object. It is suggested that the illusion is due to imperfect control over convergence.

Hayes (2) investigated an illusion noted by astronomers, the tendency to overestimate the luminosity of the lower of twin stars.

Two lights were used whose size, color, distance apart, and meridional location were varied. The disparity was limited to foveal vision and the vertical meridian, and the intensity of the lower light was overestimated in these conditions. The illusion was present for both monocular and binocular vision and persisted with practice. Its degree depended to some extent upon the color, size, and distance apart of the two lights. No corresponding size illusion was discovered.

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SUGGESTION

BY WALTER DILL SCOTT

Northwestern University

In performing the Ink-Blot experiment on imagination Feingold (1) directed each subject to "saturate" his mind for fifteen seconds with the sight of a picture postal card. The object of the experiment was to discover: (a) "To what extent can suggestion control or direct imagination?" and (b) "Is suggestively induced imagination more or less fertile than free imagination?" The conclusions were: (a) Visually induced suggestion can direct visual imagination about 24.5 per cent. of the time. (b) Such suggestive stimuli tend to diminish the fertility of the imagination about 29.4 per cent. of its normal range.

Town (7) made a systematic attempt to discover the change in suggestibility with a change of age. For this purpose she selected one group of forty boys, aged twelve, and another group of thirty boys, aged fifteen. Except for age the two groups were assumed to be homogeneous. Five of the best known tests on suggestibility were applied individually to each of the seventy boys. Her con-

clusions are: "That average boys of twelve and fifteen years of age are highly suggestible, that the difference in suggestibility due to the age differences between twelve and fifteen in average boys is slight, that to secure an estimate of an individual's suggestibility it would be well to use a series of tests each affecting the suggestion through stimulation of different senses, that repetition has little if any effect on the strength of a suggestion." Like previous experimenters, she found that the subjects shown to be highly suggestible in one test were not the most suggestible in other tests. In all but one case the correlation between tests is negligible.

In recent literature we have several reports of attempts to analyze and to standardize the most favorable conditions for utilizing suggestion in influencing men. Gowan (2) discusses the necessity of paying attention to the following: the prestige of the suggestor, the suggestibility of the subjects, the duration of the suggestion, and the volume of the suggestion. Hollingworth (3) presents the following laws of suggestion: It is important to suggest no rival idea, to make the suggested idea to appear to be of spontaneous internal origin, to make use of ideas of intrinsic intensity, to use positives rather than negatives, to secure complete attention, to utilize the prestige of the suggestor, to avoid internal resistance, and to make use of repetition in presenting the suggestion. Scott (5) attempts to catalogue the conditions in which suggestion is more effective than argumentation, also to describe the conditions for making suggestions successful. Münsterberg (4) analyzes the points of attack in making a suggestion effective: "One way is to strengthen the suggestive power of the idea by reinforcing it; the second to weaken the opposing idea directly by undermining it; and the third way is to heighten the suggested idea and to weaken the opposite idea indirectly through the suggestible attitude. All three methods can easily be combined." Wallas (7) illustrates the despair to which a writer is driven if he makes use of an unsatisfactory definition of suggestion. "It would tend to clearness in psychological statement if the use of the substantive 'suggestion' were abandoned, and if the adjectives 'unconscious,' 'subconscious,' or 'incompletely conscious' took its place."

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TESTS

BY FRANK N. FREEMAN

University of Chicago

The past year has witnessed the culmination of constructive labors which represent two contrasted points of view in reference to the methods of testing for mental deficiency. The type of test series which is represented in the Binet-Simon scale has been perfected and enlarged in the revision of the Binet scale by Terman and his co-workers at Stanford (20). In this work the principle of classification by age groups is maintained, but the number of tests is enlarged and all of the tests are subjected to severe standardization. The Yerkes-Bridges scale (26), on the other hand, eliminates the principle of age classification in the scale itself, and hence finds it necessary to adopt this principle in the use of age norms as means of interpreting the results of the tests. In contrast to the Stanford revision the Yerkes scale uses fewer rather than more tests, but allows for a variety of grades of answer to each test. Future experimentation will have to determine whether it is better to include the age principle in the tests themselves or in the interpretation of their results.

In the monograph of Miss Schmitt (16) there is an elaborate critique of the Binet tests based upon their use, an attempt to standardize the Healy-Fernald tests and, as the most original part of the monograph, the analysis of performance in the school subjects as a means of indicating something regarding the possible mental advancement of the child in the school. Other discussions, critiques and reports upon the application of the Binet Tests are made by Descoeudres (3), Keller (8), Pintner and Patterson (14) and Porter (15).

Four of the papers bear upon the moot question of tests in

vocational guidance. Woolley (24, 25) gives a large amount of data resulting from the study of the children who received work certificates in Cincinnati as a part of the work of the Vocation Bureau. Mrs. Woolley has pursued the method of giving each child a large number of tests for the purpose of exploring broadly his intellectual ability rather than for the purpose of attempting to find specialized capacities. The results are formulated in a very careful manner in order to facilitate placing any individual child in the general scale composed of the results in all of the tests. Hollingworth (7) and Kitson (10) discuss the various possible methods of psychological analysis of vocational ability. They agree in their theoretical conclusions with the practice of the Vocation Bureau in placing little faith in the attempts to make fine discriminations among types of ability and in placing greatest reliance upon the ability to determine the candidate's general intelligence. This general mental examination is also the method pursued by Scott (17) in formulating tests for the selection of salesmen.

Kelley (9) has carried the statistical method of correlation forward a step by developing the use of the regression equation applied to individuals, rather than simply making a formulation of relationships by groups. He has developed the method by which he considers it possible to so apply this equation that the future standing of an individual can be calculated on the basis of his work in earlier periods of the school, or upon the basis of tests.

Single tests or groups of tests have been standardized by the New York State Board of Charities (1), Bateman (9), Goddard (10), Goudge (11), Haines (12), Pintner (13), Trabue (21), and Travis (22).

Schulhof (18) has worked out a very elaborate form of tests by means of definitions and of questions such as "What is such a thing for?" "What is the difference between two things?" or "Why is such and such a thing done?" No data are given of a statistical sort of the results of this test. It is intended to be applied in the diagnosis of intelligence.

Peterson (12) has given an elaborate and useful description of methods of testing for vision and hearing.

Whipple (23) has published the second somewhat enlarged edition of the later part of his *Manual of Mental and Physical Tests* in a separate volume. The general nature of the treatment and the content are in the main the same as in the first edition. The book is brought down to date and revised in minor details.

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SPECIAL REVIEWS

An Introduction to the Study of Colour Vision. J. H. PARSONS.
Cambridge: University Press; New York: Putnam's, 1915. Pp.
viii + 308.

This book of Dr. Parsons gives an admirable presentation of the facts of light-sensation (that is, of color-sensation, both chromatic and achromatic),¹ and it will be found to be invaluable in those laboratories where color knowledge has hitherto been confined to the facts given prominence to by Professor Hering. In other words, the splendid accumulation of scientific knowledge which has issued from the laboratories where the Helmholtz theory rules is here given a proper setting forth. With this book on his shelves, unique in its completeness as regards the science of the subject (for applications of color it should be supplemented by the new work of Luckeish), it ought to be impossible for any director of color investigation to proceed in ignorance of half the field of ascertained fact in his subject.

A good test-object as to a writer's comprehension of the fundamental facts of color consists in his use either of the terms protanopia and deutanopia, or of scoterythrous and proterythrous, for the two types of yellow-blue vision, and of the corresponding terms for the various forms of anomalous tetrachromatic vision studied by Donders and by Lord Rayleigh (and exhaustively by König). His use of the latter two terms indicates that he knows no more than that, of the two types, one has the red end of the spectrum darkened, the other has not; but if he uses the former two terms, it is apparent that he is aware of the reduction to accurate measurement of these two forms of dyschromatopia. His color terminology is here at once illuminative as to his state of mind. Dr. Parsons meets this test. For daylight vision and for low-light vision respectively he

¹ See PSYCHOL. BULL., February, 1913, for my suggested color-terminology. Thus I propose to use the ambiguous word *color* in the wider of its two present significations, and to use the term chromatic sensation or chroma in the sense of color proper. For instance, the dealers in wall-papers are correct when they use the term *monochrome*, except in the case of papers of different shades of grey: for these we ought rather to say *achrome*, since they are without chromatic character. Grey is a *color*, but it is not properly a *chroma*. Thus a *color* theory is a theory which purports to account for the achromatic as well as the chromatic sensations.

uses the terms photopia and scotopia; these terms should become, like protanopia and deuteranopia, protanomalous and deuteranomalous, the standard expressions.

Dr. Parsons's book comes nearer to giving an adequate discussion of color theories than any book on the subject that has yet appeared. Though I say nearer, I do not mean that it comes very near: one is tempted to believe that, as all philosophers are born either Platonists or Aristotelians, so all psychologists are born either Helmholtzians or Heringians—and this means incapable of understanding the point of view in the one case of Hering, in the other case of Helmholtz. In other words, the psychologists have long since forgotten the existence of the Helmholtz theory (in which they are quite correct), but they have unfortunately thrown away therewith the Helmholtz facts. The physicists on the other hand are not yet aware of the existence of the Hering theory: Dr. Nutting, for instance, in his book on *Applied Optics*, says: "According to the commonly accepted theory of color vision," meaning the Helmholtz theory. Professor Woodworth, in addressing the Society of Illuminating Engineers, in exactly the same way treats the theory of Hering as the commonly accepted theory, and that of Helmholtz as not existing (in spite of the fact that his audience consisted of physicists, who were sure to be followers of Helmholtz). The followers of Hering do not even take the trouble to say that they consider the work on color sensation which issues from the laboratories of the physicists and the physiologists unconvincing, and to point out their grounds for not accepting it: they are content to ignore it. There is probably no other field of science (nor ever has been) where two different schools can live side by side—in closely contiguous university buildings—without being aware of each other's existence. Usually it is the case that possession of the munitions of war is sufficient to determine the fate of combatants, and here the great color-mixing instruments are all in the hands of the anti-Heringites; but in this instance the possessors of the inadequate apparatus have not always been able to recognize their inevitable defeat.

Dr. Parsons makes a brave effort to give open-minded treatment to the two points of view in color theory, but as matter of fact he never attains to a real, ingrained, feeling for the psychological aspect of color-sensation—that means the recognition of the unitary character of yellowness and of whiteness (Mach and Leonardo da Vinci). He gives a very good showing up of the incongruities and the illogicalities of the theory by which Hering attempts to account

for these unitary sensations, but he fails to notice that the view of Schenck (which is usually affirmed to be an elaboration of the Ladd-Franklin theory) is in reality a return to the pre-psychological dark ages of Helmholtz. Schenck states explicitly that there is no need of accounting for the yellowness of yellow and the whiteness of white, that these characters are imaginary, and immaterial. The Ladd-Franklin theory aims to unify and to offer a substratum for both the psychological facts of Hering and the physical-stimulus facts of Helmholtz; by means of a single, simple, photochemical hypothesis it accounts at once for (1) complementation (where we should have the yellow-blues we get whites), and for (2) the development of the color sense (as exhibited in defectives, in animals, in the periphery of the normal eye, and in normal scotopia). Of these two features, Schenck adopts one (the second), but rejects, although it lies at his hand, the other (the first), for the reason that he is too unpsychologically minded to feel the necessity for it. And, as regards this character, Dr. Parsons, I fear, is in the same boat. The fundamental error of his way is exhibited when he maintains that Helmholtz has *proved* that vision is trichromatic (and hence that a tetrachromatic theory, like Hering's, or mine, is impossible). But here comes in evidence the fatal danger of an erroneous terminology. What Dr. Parsons means is that vision is capable of being reproduced by less than all the rays of the visible spectrum—by no more than three of them, in fact. This character of vision may be called its three-stimuli character, or equally well, its three receptor process character, but it has nothing to do with the number of independent *chroma-sensations* which succeed, in the end, upon the retinal photochemical processes,—these are four in number. The three-stimuli character of vision receives its diagrammatic representation in the color triangle, which is nothing more than the expression, in terms of trilinear coordinates, of the simple facts of "matching by mixtures." The tetrachromatic character of vision may be seen diagrammed in what I have called the quadrigeminal color area.¹ The matters which are under discussion between those who hold by the Hering and by the Helmholtz facts respectively are so fundamental that until they are reconciled in a theory which envelops them both (as, *e. g.*, the Ladd-Franklin theory purports to do) minor attempts at giving *ad hoc* "explanations" of disconnected phenomena are a sad waste of time. It is,

¹ *Am. Encyclop. of Ophthalmology*, Art. Color Theory, and *Psychol. Rev.*, May, 1916.

of course, a keen logical pleasure to show up, at length, the futilities of, for instance an Edridge-Green, but a text-book ought not to be unnecessarily cumbered: such matter as this is sufficiently presented in the pages of a review.¹ A discussion of the theories of Pauli and of Bernstein, for instance, would have cast much more light on the true nature of the requirements of a color theory.

But in spite of these fundamental insufficiencies, one can only be grateful to Dr. Parsons for his indispensable book.

CHRISTINE LADD-FRANKLIN

COLUMBIA UNIVERSITY

Life and Human Nature. B. FULLER. N. Y.: Longmans, Green.

This very readable book much resembles some of the later productions of Lord Avebury and is typical of a sort of literary work which appears chiefly in England. The author is a colonial administrator, cultured and trained, practical, abounding in common sense, with shrewd observations on life, tolerant and openminded, conservative and orthodox, a reader of books on science and philosophy but without technical tastes or training. The book is very readable, though the many statements of controverted questions which are given as if there were no two opinions, and the absence of references, will not only detract from the value of such a work for the expert, but will also have a tendency to mislead the untechnical reader.

There are three parts, of which Part I is the longest, wherein is treated, under the heading Attributes of Life, a list of topics such as, Change, Sensation, Reaction, Instinct, Memory, Habit, Imitation, Consciousness, and Volition.

While most of the positions are well taken, there are not wanting instances of slips and offenses against logic. In the discussion of sensation there is a frankly solipsistic position assumed, in which the world is described as "like the whorls and eddies we see when we press hard upon our closed eyelids." Out of this confusion "the brain" conjures up "shapes and colors, sounds and solidity, which have no more resemblance to the reality than the notes of a music box resemble the machinery." We live in the midst of the unknown. This surely leaves our knowledge in a very unsatisfactory condition, but the matter is cleared up in the next paragraph when we are told that our guide is perception, and not sensation,

¹ Dr. Parsons writes me, in reply to my protest on this point, that he has been obliged to take into account the low state of knowledge regarding color among the ophthalmologists in England.

perception being "sensation adjusted in the light of previous experiences." It is difficult to see how one deception would be any less misleading for having another deception immediately preceding.

Among the instincts are suggested chilliness, ingenuity, declamation, prostration, justice, honesty, truth, and asceticism. "Both horses and dogs appear to possess a sense of justice." Every quality must be present in the lowest animals if it is in the human being. The only alternative would be special creation by divine power, which he rejects. The author is here reflecting the position of Bateson, who is mentioned in the preface, but it seems that the large use which he makes of the ideas and concepts of Bergson would have had more influence in presenting a third alternative.

The influence of Bergson is very obvious. In the erection of life into a metaphysical entity, and even to the detailed picture of the conflict between life on the one hand and matter on the other, the obligation to Bergson is extremely direct. It is apparent that the various positions have not been rigorously thought through. It is probable that the author would not care to do so.

Part Two is devoted to a discussion of the Constraining Influences on Human Nature, Race, Environment, and Culture and the wide experience and acquaintance with the peoples of Europe and Asia make this a very readable section. The Third Part is taken up with Human Achievements, Social Progress, Material Progress, Modern Economics, and Modern Politics. It is written from the standpoint of a conservative Englishman before the war. What he would write now, it would be interesting to know. At all events it is not psychological material and should not occupy any more of our space.

ELLSWORTH FARIS

UNIVERSITY OF IOWA

The Freudian Wish and its Place in Ethics. E. B. HOLT. New York: Holt, 1915. Pp. vii+212.

For psychology the value of this book lies chiefly in the endeavor it makes to advance the principles of purposive motivation in its purely behavioristic sense. To accomplish his end the author calls to his aid the purpose or "wish" of the Freudian psychology, clothes it in some new regimentals, and presses it into service under the emblem of the behaviorists. He finds it to be the "first key which psychology has ever had which fitted" and, in his belief, "it is the only one that psychology will ever need." The "wish"

is discovered as the *élan vital* which rejuvenates a static psychology; it is the underlying motive for movement and action; and thus it becomes the ultimate "causal category" for behaviorism.

In the first chapter of the four, the dynamics of the Freudian doctrine is epitomized and exemplified with a wealth of illustration which comes, for the most part, from the author's own experience. The very first few pages give us the concept of the "wish" as "any purpose or project for a *course of action*,¹ whether it is being merely entertained by the mind or is being actually executed"; it is "dependent on a *motor attitude* of the physical body, which goes over into overt action and *conduct* when the wish is carried into execution." In developing this aspect of purposive initiation of conduct, the book affiliates itself to that group of publications which have recently attempted to reinstate the excommunicated "soul" into the good graces of the discipline. "The living body through a long process of organization has come at length to 'embody' purpose. But the soul is of course always and forever the *purpose* that is embodied, and not the mere matter . . . that as a mechanism [it] embodies." The main portion of the chapter busies itself with applications of the Freudian interpretation to the dream, to the manifestations of wit and humor, to slips of tongue and pen, and to apparent transference of thought.

"The physiology of wishes and their integration" is the heading of the second chapter. In the foregoing section with one or two exceptions the author has not deviated from the current Freudian doctrine. At this point, however, probably in order to bring the teachings of Freud in accord with the assumptions of the behaviorists, a marked divergence from the orthodox rendering is noticed. The "specific response" of the organism and the "wish" "as Freud uses the term" are identified. Either may now be defined as "*a course of action which the living body executes or is prepared to execute with regard to some object or some fact of its environment.*" A doubt, we think, may justly be raised as to whether Freud would recognize his "wish" in this guise; certainly most writers have interpreted Freud otherwise. Freud himself speaks of "disturbing thoughts," of "feelings" and "emotions," of the "psychic life," of "the intention of the repressed material to come to conscious expression," and says that all faulty or chance actions may be referred "*to unwelcome, repressed, psychic material, which, though pushed away from consciousness, is nevertheless not robbed of all capacity to express*

¹ The italics are everywhere those of the book.

itself."¹ But Holt insists that "in the view now before us, consciousness and 'the subjective as such' are done away with." Consciousness is "the relation between the living organism and the environment to which it specifically responds" and "*thought is latent course of action with regard to environment*," "it is often a mere irrelevance, a surface embroidery on action." But does not the history of the reaction experiment prove the reverse? As long as the outward behavior of the organism in terms of reaction-time was the only psychological criterion used, practically no progress in the interpretation of action was made; it was left for introspection to reveal the *Aufgabe*. The author's exposition of his point of view is elaborated in an appended essay recently published in periodical form. A review of this article needs more space than can be given here; its tone is clearly in a different key from that of the rest of the book; and its appeal is to the more seriously minded philosopher. We cannot refrain in passing, however, from expressing our surprise at the author's apparent inconsistency when he endeavors to argue away introspective evidence by citing a quotation from James which is based on introspection (p. 176).

With the "wish in ethics" and "some broader aspects of the Freudian ethics," the topics of the third and fourth chapters, we are here not much concerned. Suffice it to say that the author contrasts the "discriminating" conduct, in which intelligence is brought to bear on the situation, with the "suppressed" and "dissociated" type, in which "wishes" are suppressed without reason; "truth is the sole moral sanction." To have a "free-will" means to have as few suppressions as possible; the man who in his conduct follows the teachings of a discriminative understanding is the good man.

In many ways the author is certainly to be congratulated on the product of his thought and pen. The elements that are common to the Freudian and behavioristic doctrines are well brought out, and the only weak point lies where the danger lies—in the distortion of concepts to make them fit. A difference of opinion is, moreover, no serious charge against an author or his book. To the reviewer's knowledge, nothing in psychology has recently been written which is more stimulating and more readable; the author's fund of personal

¹ *Psychopathology of Everyday Life* (trans. by Brill), 1914, pp. 302, 326, 330, 332, 338.

illustrations and his clearcut presentation of the theme do much toward a keen and renewed interest in things Freudian.

CHRISTIAN A. RUCKMICH

UNIVERSITY OF ILLINOIS

La psycho-physiologie de Gall: Ses idées directrices. C. BLONDEL.
Paris: Alcan, 1914. Pp. 165.

This small volume is an attempt to rehabilitate Gall who was the founder of the modern doctrine of cerebral localization, but who has suffered, some believe, because of the almost exclusive linking of his name with the subject of phrenology. Blondel quotes the main points of Gall's works, and collects statements from different parts to show that Gall's contribution was not only of value but one which in many respects is allied to the views of the present day. Besides the introductory and concluding sections the chapters take up (1) the physiology of the brain, its origin, its relations to cerebral anatomy, (2) the continuity of nature and the specificity of organs, (3) mental activity and the cerebrum, and (4) Gall's positivism, and the anatomo-physiological representation of the mental life.

Gall did give the greatest impetus to the doctrine of plurality of cerebral functions, but it is necessary to point out that the crude statements of a hundred years ago are not the same as those of twentieth century neurologists. Physiologically the brain is made up of a *plurality of mechanisms*, but it is not a *collection of organs* as Gall believed. On the other hand and contrary to Gall, it is a unitary viscus but not unitary in the sense of Flourens. Gall's cerebral plurality view was the outcome of the logical application of the doctrine of independent mental faculties and propensities, using as the fundamental basis the belief that the brain is the organ of mind.

As an account of an important historic contribution the book is interesting reading, but like many histories of scientific movements it tends to demonstrate too much. If Gall had the knowledge of cerebral anatomy and physiology we now possess he might not have put forth such crude phrenological views as have even recently been promulgated, but many important facts were not discovered in his day. His influence, especially on clinical neurology, was beneficial and great, but fortunately the older view is now passing. Blondel's book is more than an appreciation, it is a defense of Gall's views, with interpretations to make the matters fit into the advances of a century. Even phrenology in its crass form is not taboo, for

the existence of an Institute and the publication of a Journal of Phrenology in New York City are noted with approval.

SHEPHERD IVORY FRANZ

GOVERNMENT HOSPITAL FOR THE INSANE

Eugenics; Twelve University Lectures. M. A. ALDRICH, &c. New York: Dodd, Mead, 1914. Pp. 342.

This volume representing the various viewpoints of physiologist, anatomist, sociologist, physician, biologist and psychologist affords a very convenient compendium of the best opinions upon eugenics. Though each of the well-known writers brings his distinctive type of training and materials to the general theme there is a remarkable agreement in the trend of the arguments and in the adherence to Dr. C. B. Davenport's program of first, investigation, then education and finally legislation. Each author feels the weight of Dr. Barker's foreword, "True eugenics is, at present, in less danger from its avowed enemies than from those who masquerade as its friends," and the treatment, consequently, is refreshingly sober and practical. The Mendelian laws are stated in almost every lecture and Galton's theories appear about as frequently. The work of Davenport and Goddard is to be found in nearly every chapter. Though this material is ingeniously handled by Wolcott, Vaughn, Howell, Jordan and Ellwood the fact remains that the material available for the best informed in eugenics is still meager, and the urgent need of the present is more *investigation*.

HENRY C. McCOMAS

PRINCETON UNIVERSITY

Bodily Changes in Pain, Hunger, Fear, and Rage. W. B. CANNON. New York: Appleton, 1915. Pp. xiii + 311.

This book is mainly a re-presentation of work which has been carried out in recent years by Professor Cannon and others at the Harvard laboratory and which was originally reported in various journals. The results are of unusual interest and importance. The experimental work has been carefully done. The book is well organized and well written.

In a sketch of the autonomic nervous system, Cannon finds it probable that the sympathetic division is arranged for diffuse discharge and is brought into activity as a whole; the sacral and cranial divisions are arranged for particular action on separate

organs and may act in parts. He also emphasizes that whenever the sympathetic and either the cranial or the sacral division innervate the same region, the two systems act in antagonistic ways.

It is observed that emotions like anger, fear and pain inhibit the peristaltic waves in the stomach and the movements in the intestines as well as the secretory processes of the stomach. Anger, fear and pain also cause increased secretion from the adrenal glands. These glands are innervated by the sympathetic system and the secreted adrenin causes effects in many ways like those due to sympathetic action.

Pain, rage and fear cause an increase in blood sugar, in which process the adrenal glands play an important part. Splanchnic stimulation of the adrenal glands tends to remove the effects of fatigue and improve the contraction of fatigued muscle. This result may be due in part to the rise in arterial pressure, which is greatly effective only when the blood pressure is at a low level; and in part to a specific action of the secreted adrenin upon the fatigued muscle, which is effective even upon a muscle deprived of its nerve supply by section and degeneration. The time required for coagulation of the blood is decreased by adrenin, and, correspondingly, we find faster coagulation with pain, fear and rage.

All the above changes in response to emotion are shown to have utility as adaptative reactions. The increased blood sugar is a source of muscular energy; the more rapid coagulation time prevents loss of blood in case of injury; fatigue effects are set aside; the adrenin probably has a dilating effect upon the bronchioles, and so gives more efficient breathing; even inhibition of the digestive system is supposed to reserve energy for use in the more immediately necessary muscular action. The accumulation of adrenin in the blood also serves to prolong this adaptive condition, and as a net result men are sometimes able to bear up under a remarkably intense and sustained expenditure of energy. Since the emotions studied all gave the same reactions, Cannon argues that the visceral responses only contribute an indefinite uniform element to an emotional complex, and the differences which distinguish emotions from one another should be sought for elsewhere. This is not inconsistent with the supposition of inborn automatic differential responses in other muscular groups. The reviewer wishes to suggest that we should, if possible, study more completely the visceral effects of joy, amusement, etc., and that a survey of the literature on circulation and breathing changes with mental conditions would

add details at this point especially. It may be questioned, furthermore, whether the antagonism between the sympathetic and other systems, as outlined by Dr. Cannon, would hold as fully for these emotions, as for pain, fear and rage.

Professor Cannon shows that modern war has developed into forms that are not a natural exercise of the inborn fighting instinct, and he thinks proper exercise of this instinct can be found in international athletics.

Appetite is the desire for food arising out of the pleasures of eating, while Dr. Cannon finds hunger to be a characteristic sensation caused by contractions or cramps of the stomach.

JOHN F. SHEPARD

UNIVERSITY OF MICHIGAN

The Foundations of Normal and Abnormal Psychology. B. SIDIS.
Boston: Badger, 1914. Pp. vii + 416.

In this volume Dr. Sidis outlines his fundamental concepts of psychology, concepts and principles which have proven in his hands so rich and fruitful in their application to abnormal mental life. Throughout this volume emphasis is laid on the applicability of biological concepts to the psychic process. Indeed it is pointed out that the psychic process is a biological process, and is in its main characteristics closely analogous to the life process.

Unlike the physical process, which, on account of the concept of causality, is endless and infinite and has links that can be traced endlessly in the past and the future the psychic process is finite and final; it has a beginning and an end; it begins with a purpose whether conscious or subconscious, and ends with an adjustment. This attribute of finality is precisely what characterizes the life process. Both ontogenetically and phylogenetically the life process has a definite beginning and an end, neither being linked causally to antecedents and consequents. Purpose and final causation are the attributes of the life process.

But this teleological aspect of the biological and psychic processes has its limitation. Sidis very strongly emphasizes what he calls the *chance aspects of life and mind*. This concept is of fundamental importance in his psychology and emphasizes his divergence from the Freudian psychology, which ascribes a meaning, a purpose and an adaptive value to every idea, to every fleeting thought, with the resulting highly artificial, far-fetched, often absurd interpretations of mental life.

What is true of the biological is also true of the psychological process. The general purposive activity of mental life is the resultant of the selective activity from an infinite number of spontaneous chance variations of sensations, feelings, emotions and ideas that flit through the mind. Out of an enormous mass of spontaneous, purposeless mental states, the selective activity utilizes only those which are adapted for its special purpose. These chance variations form the matrix out of which the purposive, psychic process arises.

Starting with a study of psychology, of the psychic object, and with an examination of the various hypotheses of the character of the psychic process the largest part of the volume is devoted to a presentation of various psychological theories and principles, such as that of Reserve Energy, for instance, which the author has briefly presented in former works, but which are developed in great detail in the present volume.

The "moment consciousness," a concept which Sidis first outlined briefly in his *Psychology of Suggestion*, further in his *Multiple Personality*, is fully developed in his present work. By the moment consciousness, regarded by him as the fundamental assumption of psychology, Sidis understands the synthetic unity which is the basis of all mental activity. All mental states, from the simplest to the most complex, have this in common, that they belong to a psychic individuality. Mental life is not simply a series of mental states, but it is an individuality in which the psychic series occurs.

Of special importance and significance are Sidis's studies of the various types of moments in the hierarchy of their complexity and stage of evolution, both ontogenetic and phylogenetic. These psychological studies of the various types of moments or of the various types of mental activities, arranged in their biological series from the lowest to the highest psychic functions of organic life, are the most important in the volume and constitute one of the most comprehensive and significant contributions in the domain of psycho-biology, both normal and abnormal. We may only say that Sidis classifies the infinite variations of mental activities characteristic of animal life into the following types: (1) The Desultory Moment. (2) The Synthetic Moment. (3) The Recognitive Moment.

The aspect of recurrence of moments consciousness of the lower types is at the very foundation of psychopathology and gives the

underlying pathology of the clinical manifestations and of the symptomatology of psychopathic diseases. The scientific work of "The Foundations" strongly contrasts with the so-called "psychoanalysis" and with "psychoanalytic" exegesis, characteristic of the Austrian School of Freud and his disciples, a school that occupies itself with symbols, allegories, and myths.

A study of the organization and development of the moment, both ontogenetic and phylogenetic, shows the inverse relation that exists between complexity and stability. The more complex, the more highly developed is the moment, the less stable it is in its constitution and function. This lack of stability of the more complex moments, of those acquired later in the development of the individual or of the race is evidenced in the process of mental disorganization. In disease processes of the mind, the higher forms of mental organization, the moral and the social, suffer first, and when the process of degeneration has gone deeper the simpler psycho-physiological functions are affected, such as sex and food instincts. The process of mental disorganization follows from the complex to the simple, to the more lowly organized but more stable states.

The organization of moments of the psychic individuality of various types carries within itself the regulative inhibitive control. No special mechanisms are required for that purpose. Nor do we need to have recourse to Freudian repressions, suppressions, censors, and to all kinds of other mysterious agencies called in to explain with cunning ingenuity apparently inexplicable phenomena. Nor do we need to appeal to any mysterious will powers. Every psycho-biological system of groups carries within itself its own inhibitions, which are just as requisite for normal activities as are the inhibitions in the organized system of physiological activities. In pathological states, or in abnormal mental conditions, the inhibitions may either become accentuated, exaggerated, or on the other hand they may become completely removed. In case of dissociation, the dissociated moment will react with its full force and energy, because of the removal of the inhibitory control of associated sets of moments.

In states of mental dissociation the moment consciousness, because of its being cut off from the associative activity of other moments, is no longer subject to inhibitory influences and is therefore within easy reach of suitable stimuli, responding to them with the full force of stored energy until a state of fatigue and complete

exhaustion ensues. On the other hand, because of the absence of associations, the avenues of approach are diminished and the dissociated moment will respond to a smaller variety of stimuli. Opportunities for the activity of the dissociated moment are diminished, but when once stimulated by an appropriate stimulus the moment responds with unchecked intensity. This gives the psycho-physiological key to the symptom-complex of psychopathic states.

In connection with the application of the physiological factors of threshold stimulations and inhibition Sidis works out a principle of great importance, a principle also developed by Professor James at the same time with Sidis but on other grounds, the principle of reserve energy.

We have seen that the evolution of mental life is from the simple to the complex. The increasing complexity of mental life, produced by the association of simple states into complex groups, brings about an inhibitory effect on the function of the components of the mental system. This inhibition, a concomitant of complexity of mental organization, is of inestimable value to the individual in his adaptations and adjustments to the environment, and plays no small rôle in the growth of civilization. The increase of the stimulus threshold of the moment, due to inhibition, produced by its association with other moments, prevents an undue exhaustion and permits the storing of energy requisite in critical moments as well as necessary to the progress of the individual and the race. Individual and social education aid in the formation and accumulation of reserve energy which makes all progress possible.

With the development of mental life there is thus an ever greater storing of energy, and the ease with which this store of reserve energy may be accessible to the individual, to the race, or to society is an index of the degree of civilization. The greater the store of reserve energy and the greater the ease with which it can be reached to tide over critical moments as well as for other purposes necessary to the individual, race, and society, the higher the state of civilization may be regarded.

Again the heightening of the stimulus threshold and consequent inhibition produced by natural selection and by education, individual and social, permits an ever greater accumulation of reserve energy, the condition of evolution and social progress.

We can well realize that the conclusions of the volume are of the utmost consequence not only from a theoretical standpoint, but also

from a purely practical, medical, therapeutic standpoint, more specially from an educational and sociological point of view.

HARRY LINENTHAL

BOSTON, MASS.

Die Grundlagen der Psychologie. T. ZIEHEN. Leipzig: Teubner, 1915. Pp. vi + 259, vi + 304.

The author's aim in the first volume is to lay an epistemological foundation of psychology which is to be independent of speculative hypotheses and derived entirely from an analysis of what is immediately given in the experience of the individual. The second volume develops the general principles of such a psychology, with occasional references to their physical and physiological determinations.

The language and terminology, especially of the first volume, are unfortunately somewhat complicated by the desire to avoid familiar words with their confusing implications and by an effort to condense the discussion through the use of many Greek and other symbols. Many important details are thus only briefly treated, the reader being referred to Ziehen's earlier works.

Like all other sciences, psychology must derive its subject-matter from what is immediately *given* in experience. This general concept of the *given*, in Ziehen's terminology the *gignomena*, does not involve any kind of distinctions within experience, and especially does it not differentiate between the psychical and the material, or between "a" sensation and "my" sensation, etc. The *gignomena* include everything, so that it is impossible either to form a meaningful generic concept of the *gignomena*, or to form an idea of something absolutely different in essence from the *gignomena*, for example, the idea of God. These propositions constitute his principle of immanence, which he finds most closely resembling and related to Comte's positivism in its original form.

But in his epistemological "reduction" or classification of the *gignomena* Ziehen really occupies the Humean standpoint, since he divides them into sensational and ideational *gignomena* which differ from each other merely in degrees of vividness. In their concrete complexities these *gignomena* fail to reveal any order or scientific principles, and the latter can be established only if the changes that constantly occur in them are still further analyzed. He recognizes three kinds of changes, the physical, neural, and mental. The first two are causal, taking place in temporal se-

quences, along spatially more or less well definable paths, and according to the physical laws of cause and effect. The mental changes are instantaneous, non-spatial, and occur parallel with certain neural changes, but are not causally related to them and obey their own set of parallel laws. All three kinds of changes take place or are immanent in every sensational or ideational gignomenon and involve usually a long series of intermediate links. Thus, if I interpret rightly, my present ideational gignomena of a previously observed ice-block melting in the sun include not only present parallel and neural changes, but also all the physical effects of the sun-rays on the ice and the ice on the sun and all other surroundings as well as the effects of the physical events on my nervous system at that earlier moment. This view of experience is called "binomism," and Ziehen tries to distinguish it sharply from the ordinary views of interactionism and psychophysical parallelism.

On this epistemological basis psychology is differentiated from the other sciences as dealing with the parallel changes and laws in the sensational and ideational gignomena, and these changes alone are to be understood by the term psychical or mental. In this connection he criticizes in detail several other characterizations of the psychic. He objects to Brentano's distinctions between act and object as meaningless and not helpful, to Kant and his pupils' assumption of an "inner sense" as merely adding to our given sensations and ideas a fictitious act of a fictitious faculty, to the distinction between subject and object as in the last analysis substituting for this inner sense a hypothetical bearer of the sensations and ideas, and to the characterization of the psychical as non-spatial against the spatial physical offered by Bain, Dilthey, and others, as not true in the case of certain groups of sensations.

The fourth chapter discusses the general concept of the soul and is particularly interesting in view of the recent controversies about the "self." He divides the various theories about the mind or soul into two groups. The first maintains or rather hypostatizes a substantiality of the soul, while the second tries to demonstrate the specific character of the self or ego. The concept of the soul as a simple reality, dating from Plato and Aristotle, had become so much a part of the equipment of later philosophies that it was taken practically for granted even by such recent and acute thinkers as Herbart, Lotze, and Rehmke. The last is most removed from the original view, since he holds that the soul in its existence is

anchored in its relation to other individual entities. A special position in this group is occupied by Kant, in whose view the soul is identical with the synthetic unity of apperception, that is, a formal or logical unity meaning not even as much as personal identity. Wundt and Lipps have only slightly modified this view. The second group of soul theories has to establish and defend the specific characteristics which are to distinguish the self from other entities. The specific ego-character is said to be experienced directly through the inner sense and to require no other proof. Ziehen answers that the only factual basis for such an experience lies in an ideational *gignomenon* of the self which has arisen from sensational *gignomena* of the body, and that it is otherwise meaningless to speak of "my" sensations and ideas, because we never have other people's experiences. The self in this sense is merely a habit of thought developed in early childhood, and it cannot even be based upon a feeling of activity, because of the ambiguity of the term "feeling." The second characteristic, that the self is the cause or bearer of all mental processes, is impossible of direct or indirect proof. The third one, the unity of the self, is logically the most plausible of all, but cannot be supported by the facts of self-observation. The constancy or unchangeableness of the self likewise has logic in its favor, since the successive stages of thinking, comparison, and reasoning seem to require a constant factor of reference. But Ziehen maintains that the approximate constancy of cortical elements during short time-intervals is sufficient. The last characteristic, the independent, non-causal origin of the soul and its rôle as a non-causal originator of all mental processes, is shown to be a groundless assumption that needs no further refutation.

According to Ziehen's own view the terms "self" or "ego" or "I" merely signify the fact that a certain given set of sensations and ideas form a collective system in which they are characterized by special interconnections, just as the drops of water in a river-bed are more closely interrelated than the individual raindrops. Nevertheless it would be considered a mere play of poetical fancy to hypostatize nowadays this closeness of relations into a river-entity, perhaps corresponding to the personified spirit of the river found in certain ancient mythologies. The same kind of reasoning is valid in the case of the mind of a group, *e. g.*, the mob-spirit.

In the next chapter the relations between mind and nervous system are discussed. The theory of the psychophysical parallelism

in its modern and most widely accepted form tries to reduce to identity the two originally and essentially different series of nervous and mental processes by assuming that they are different only when viewed from two separate points of view. Ziehen accuses the supporters of this view of obscurity in thought and expression and asks, for example, who is the observer that takes two different points of view of his own experiences? How does it happen that his experiences may appear to him in two such different ways? Does the observer himself belong to the group of nervous or mental processes? Another conceptual ambiguity is dealt with in the discussion of the conscious and the subconscious, in which the latter term is allowed to refer only to those nervous changes in the gignomena which are not accompanied by mental changes.

The last chapter of the first volume is mainly concerned with the relation of psychology to logic. To psychology is attributed the twofold task of determining the actual course of thinking without regard to right or wrong reasoning and of deciding under what conditions thought processes may be judged as right or wrong. Logic, on the other hand, must establish the value of right and wrong thought and formulate rules for the correct application of these values to everyday reasoning. Analogous divisions of labor hold with regard to esthetics and ethics.

The contents of the second volume may be treated more briefly. The first chapter deals with the introspective, genetic, and experimental methods of psychology and outlines the various subdivisions of the science. The rest of the volume is devoted to the results of psychology.

The only universal characteristics of mental processes are their temporal course and their lability, while quality, intensity, and locality are peculiar to the sensations. It is difficult to understand why vividness is here omitted. After a preliminary classification of mental processes Ziehen criticizes other classifications, which again reveals his astounding familiarity with the literature and his acute logical thinking in pointing out many subtle and instructive differences. As a consequence, he seems to disagree with everybody and yet appear "not extremely radical." Stumpf's doctrine of mental functions are dealt with in detail, while the doctrine of apperception and the recent introduction of "tendencies" are brought into close connection with the theory of mental faculties.

The sensations are discussed only in so far as they are primary to the images or ideas, while the discussion of the latter and the

corresponding intellectual functions and complexes occupy almost 70 pages. In addition to the simple process of retention all intellectual activities require only three other fundamental functions, analysis, synthesis, and comparison or relation. With these tools Ziehen attempts to reconstruct the theory of the association of ideas. All feelings and volitions are to him attributes of sensations and ideas, although he does not employ this term in the conventional way. One third of the volume, or about one hundred pages, are devoted to the feelings, and Stumpf and Külpe are subjected to a searching criticism based on an intimate knowledge of the experimental data in the literature. Since the feelings lack genetic independence, qualitative peculiarities, and independent occurrence, Ziehen feels justified in denying them a separate existence among mental processes. He arrives at the same conclusion with regard to all volitional experiences, after having analyzed and criticized various voluntaristic theories of the past and present.

While a casual glance over the numerous footnotes in the two volumes may give the reader the impression that the author has searched his field very thoroughly, a little analysis will reveal the fact that outside of European authorities only a scant dozen American writers are referred to in about as many cases. This, of course, need not mean unfamiliarity with their works, but it does indicate a one-sided emphasis and a neglect of a large part of the psychological literature, an error which is not confined to Ziehen alone, but which in his case is the more serious, as he attempts to deal with the fundamental problems of our science.

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Sleep and Sleeplessness. H. A. BRUCE. Boston: Little, Brown, 1915. Pp. ix + 219.

This is a readable little book of six chapters, dealing with sleep, dreams, and insomnia. It forms one volume in the Mind and Health Series, of which the author is general editor. The present book is written frankly with the lay-reader in mind, but this fact does not detract from its general accuracy. In asserting, to be sure, that the dream-processes are rapid far in excess of normal waking consciousness, the author does not adduce satisfactory evidence to establish this mooted point, yet for the most part he is both entertaining and just to the facts of dream-life, so far as these facts are known. His thesis that oft-recurring dreams local-

izing their action in some organ of the body are likely to presage the appearance of disease in that region, is plausible; and his own dream-reports as a case in point, are a contribution to the literature of dreams. Freud's thesis of dreams as wish-fulfilments is stated and fairly evaluated.

Four types of dreams (the inspirational dream; the problem-solving dream; the dream of finding lost articles; and the prophetic dream) are enumerated, respectively illustrated, and given the scientific interpretation of subconscious motivation. Finally, the causes of insomnia, its treatment and prophylaxis, are discussed in an especially serviceable way, and its functional basis emphasized.

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DISCUSSION

THE VALUE OF THE FREE ASSOCIATION METHOD IN INDIVIDUAL PSYCHOLOGY

In the March issue of the *BULLETIN* Dr. Wells takes me somewhat to task because I found it hard to understand the endorsement given by Dr. Woodworth and himself to the free-association experiment, and more particularly to that form of it known as the Kent-Rosanoff Test. Though doubtful whether I should ask space here to discuss a difference of opinion between two investigators as to the appraisement of a certain method, I venture the following observations:

1. Woodworth and Wells remark of the work done by Kent and Rosanoff: "Within the bounds of its application, it would be an impertinence to offer as 'standard' any procedure for the free association test other than the one which these authors have developed" (*Association Tests*, p. 73). In recommending two modifications of instructions for the free-association experiment (*Manual*, p. 422) I suppose that I have laid myself open to the charge of "impertinence." In defence I contend that no mental test has yet reached that pinnacle of demonstrated merit that lifts it above any honest suggestion of improvement on the part of other investigators. The mere fact that a given test has been applied by its devisers to 1,000 subjects does not give it a sacrosanct standing in applied psychology.

2. The following excerpts from Woodworth and Wells indicate, I think, that the method proposed by Kent and Rosanoff is open to some modification and susceptible of further development:

(a) "If special circumstances render it desirable, it is possible to employ only a portion of the hundred words for determining the usualness of response, substituting for the remainder, words adapted to the special situation in hand" (p. 76).

(b) "Unfortunately, determinations of the 'median of community' . . . have as yet been made in only a limited number of subjects" (p. 76).

(c) "The present experimental method is placed under one disadvantage to a much greater degree than other association tests;

its material cannot be repeated within an ordinarily practical time save under greatly changed essential conditions" (p. 76).

(d) "In ordinary practise this [the instruction to reply with the first word] is not rigidly enforced, it being sometimes possible to derive elements of special significance from factors that determine the subject's departure from the set instructions" (p. 78).

(e) "It is most probable that the responses are also affected by the personality of the operator" (p. 79).

3. My own opinion about the free-association test has not been based entirely on the published work of various authorities. I have personally given the Kent-Rosanoff test to a fair number of children and adults (though I lack Dr. Wells's acquaintance with the insane), and I have personally gone over several score of results obtained by other investigators.

4. From this personal experience, supplemented by the reports published in the literature, I have arrived at my belief that the Kent-Rosanoff method (which I understand Woodworth and Wells to prescribe as "standard" procedure for the free-association test), is far from being "in the foremost rank among the methods of individual psychology," and far from having "established a definite standard of normality" and that for the following reasons:

(a) It discards the use of the time-record which many investigators have found to be a useful adjunct to any association test.

(b) By its instructions to "respond as quickly as you can" the Kent-Rosanoff method creates an *Aufgabe* which certainly tends in many cases to interfere with the natural expression of that individuality which it purports to reflect statistically.

(c) By insisting that response by a single word must be "rigidly required" it still further interferes with natural associational sequence; such an instruction, of course, operates to secure frequency tables, but it also operates to hinder the examination of individuality in mental processes. In other words, the method does not produce "free" association, but a special type of "controlled" association.

(d) By rejecting all introspective comment in favor of 'objective' results, the method again falls short of obtaining the best possible insight into mental machinery.

(e) In the actual application of these tables there arise difficulties and inconsistencies of interpretation.

(f) Application of the Kent-Rosanoff method does not reveal any recognizable modification in normal mentality after the age

of eleven years (according to the testimony of the Rosanoffs). This means, I believe, that the method is not a very precise tool for use in individual psychology.

(g) Application of the method does not reveal any considerable difference in the mentality of the two sexes (conclusion of Kent and Rosanoff). This is at least at variance with common opinion and with the outcomes of many other mental tests, and suggests, again, that the method is not a very precise tool for the individual psychologist.

(h) Application of the method does not reveal any sure or consistent relations with general educational training. Thus, for example, Kent and Rosanoff decided that it was unsafe to risk a definite generalization as to the effect on their test of a collegiate, as compared with a common-school, education; persons with a college education show more "individuality" in their responses, but so, alas, do the insane and also children, particularly if delinquent or retarded!

(i) Application of the method for diagnostic purposes to individuals of markedly different status (and this is the use, of course, in which a method that "bids fair to hold indefinitely its place in the foremost rank among the methods of individual psychology" ought to shine) appears decidedly risky, since we are assured that children rated as feeble-minded or delinquent not seldom give normal associations, while normal adults sometimes give multiverbal responses, repeat the stimulus and otherwise perform quite like approved abnormal cases! In what sense, then, can we declare that the work of Kent and Rosanoff has "established a definite standard of normality"?

These observations I have stated categorically, because I cannot take the space here to quote my authorities, cite my illustrations or defend my position with argument. They will perhaps at least indicate that I did not express my divergence of opinion from Messrs. Woodworth and Wells without having given the matter some consideration.

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BOOKS RECEIVED

- TERMAN, L. M. *The Measurement of Intelligence*. Boston: Houghton Mifflin, 1916. Pp. xviii + 362. \$1.50.
- CLAPARÈDE, E. *Psychologie de l'Enfant et Pédagogie expérimentale*. Geneve: Kundig, 1916. Pp. xii + 572.
- BALDWIN, J. M. *The Super-State and the Eternal Values*. Oxford: Oxford Univ. Press. Pp. 38.
- FINLAYSON, A. W. *The Dack Family. A Study in Hereditary Lack of Emotional Control*. Lancaster, Pa.: New Era, 1916. Pp. vi + 46. 15 cents. (Eugenics Record Office Bull. No. 15).
- LAHY, J. M. *Le système Taylor et la physiologie du travail professionnel*. Paris: Masson, 1916. Pp. x + 198. 4 fr. 50.
- FERGUSON, G. O., Jr. *The Psychology of the Negro. An Experimental Study*. Pp. iii + 138. Arch. of Psychol., No. 36.
- BURGESS, E. W. *The Function of Socialization in Social Evolution*. Chicago: Univ. of Chicago Press, 1916. Pp. vii + 237. \$1.25.
- GASKELL, W. H. *The Involuntary Nervous System*. New York: Longmans, Green, 1916. Pp. ix + 178. \$1.80.
- FREEMAN, F. N. *Experimental Education. Laboratory Manual and Typical Results*. Boston: Houghton, Mifflin, 1916. Pp. ix + 220. \$1.30.

NOTES AND NEWS

A BI-MONTHLY journal "devoted to the scientific study of problems related to social conduct," *The Journal of Delinquency*, is being published by the Department of Research of the Whittier State School, Whittier, Calif., under the editorship of F. C. Nelles and J. H. Williams, with a board of associate editors and collaborators.

FURTHER active interest is shown in the mental study of criminals in the establishment of a psychopathic research department to investigate criminals at Sing Sing, N. Y., under the direction of Dr. Bernard Glueck, of the Government Hospital for the Insane, and in the beginning of a psychological laboratory for the Boston Police Court, under the direction of Dr. V. V. Anderson. On the other hand, a committee of the Chicago Bar Association recently recommended that the psychopathic laboratory connected with the Municipal Court of Chicago be discontinued.

ANNOUNCEMENT is made of the death of Sir Victor Horsley, the eminent surgeon, whose contributions to the subject of cerebral functions are well known to psychologists.

THE following have been appointed fellows for the coming year in the Bureau of Salesmanship Research affiliated with the Carnegie Institute of Technology: D. L. Hoopingarner, C. P. Stone, R. L. Gould, E. S. Robinson.

PROFESSOR W. S. HUNTER, of the University of Texas, has been appointed professor of psychology in the University of Kansas.

THE following items have been taken from the press:

PROFESSOR L. M. TERMAN, of Stanford University, and Professor R. M. Gault, of Northwestern University, are giving courses in the summer school of New York University.

PROFESSOR W. F. BOOK, who has been engaged in organizing vocational education in the state of Indiana for the past three years, will return to his teaching at the University of Indiana as director of the psychological laboratory in the department of sociology.

